L'institut de la CAD | CDA Institute
Cahier Vimy | Vimy Paper
en coopération avec | in cooperation with
L'institut Macdonald-Laurier | Macdonald-Laurier Institute

January / janvier 2015

PUTTING THE 'ARMED' BACK INTO THE CANADIAN ARMED FORCES

Improving Defence Procurement in Canada

REMETTRE LE MOT 'ARMÉ' DANS LES FORCES ARMÉES CANADIENNES

L'acquisition de l'équipement de Défense au Canada

Dave Perry
Senior Security and Defence Analyst
CDA Institute

CDA Institute / L'Institut de la CAD ~ 1987 ~

CELEBRATING 5 YEARS MLI

CDA Institute

The CDA Institute was created in 1987, with charitable status, to provide research support to the CDA and to promote informed public debate on national security and defence issues and the vital role played by the Canadian Armed Forces in our society. Its varied research activities, events and publications - including Vimy Papers - are disseminated amongst various audiences: Canadian and International public, media, policymakers, the military, the diplomatic corps, business community, and academia.

President

General Raymond Henault (Ret'd)

Executive Director

Tony Battista

Board of Directors

Major-General John Adams (Ret'd)
Colonel Brett Boudreau (Ret'd)
Honorary Colonel Darrell Bricker
Dr. Ian Brodie
Mr. Thomas Caldwell
Mr. Jamie Carroll
Mr. Richard Cohen
Mr. Terry Colfer
Mr. David Collins
Dr. John Scott Cowan
Thomas D'Aquino
M. Ferry de Kerckhove
Mr. Dan Donovan
Lieutenant-général Richard Evraire (Ret'd)
Honourary Lieutenant-Colonel Justin Fogarty
Major-General David Fraser (Ret'd)
Lieutenant-General Michel Gauthier (Ret'd)
Brigadier-General Bernd A. Goetze (Ret'd)
Honorary Colonel Blake C. Goldring
Honorary Colonel Paul Hindo
Honorary Lieutenant-Colonel Tim Hogarth
Dr. George A. Lampropoulos
Lieutenant-General Marc Lessard (Ret'd)
Mr. Pierre Lortie
Lieutenant-General George Macdonald (Ret'd)
Brigadier-General W. Don Macnamara (Ret'd)
Vice-Admiral Paul Maddison (Ret'd)
General Paul D. Manson (Ret'd)
Vice-Admiral Dean McFadden (Ret'd)
Mme. Louise Mercier
Mr. Sean Murray
Honorary Colonel Chiko Nanji
Dr. Roland Paris
Colonel Alain Pellerin (Ret'd)
Colonel George Petrolekas
The Honourable David Pratt
Honorary Captain (N) Colin Robertson
Vice-Admiral Drew Robertson (Ret'd)
Colonel Ben Shapiro (Ret'd)
Mr. Jeffrey Simpson
M. André Sincennes
Commodore Kelly Williams (Ret'd)

Conference of Defence Associations Institute

151 Slater Street, Suite 412 A
Ottawa, Ontario K1P 5H3
613-236-9903
www.cdainstitute.ca

PUTTING THE 'ARMED' BACK INTO THE CANADIAN ARMED FORCES

Improving Defence Procurement in Canada

REMETTRE LE MOT 'ARMÉ' DANS LES FORCES ARMÉES CANADIENNES

L'acquisition de l'équipement de Défense au Canada

Dave Perry

Senior Security and Defence Analyst
CDA Institute

The author would like to thank all of the staff of the CDA Institute, past and present, for their assistance, and Meaghan Hobman, Peter Forsberg, Arnav Manchanda, and Paul Hillier in particular, and the staff of the Macdonald-Laurier Institute, David Watson in particular. This paper benefitted greatly from the participants at a workshop held in 2013 and all those who shared their perspective with the author. Special thanks are in order for the very helpful feedback of the CDA Institute Editorial Board, Brett Boudreau, George Petrolekas, Pierre Lagueux, Mike Petric, MGen David Fraser (Ret'd), others who asked not to be thanked by name and two anonymous reviewers on earlier drafts. All errors or omissions are the author's alone.

Executive Summary

The announcement of Canada's Defence Procurement Strategy (DPS) in February, 2014 represents a massive shift in the way Canada acquires military equipment. Although this method is a considerably more systematic manner in which to approach defence acquisitions, its implementation remains a work in progress.

Its objectives can be effectively divided into two categories: improving the procurement system and increasing the domestic economic benefits of the procurement process. More specifically, the focus of these efforts will be upon delivering the right equipment to the Canadian Armed Forces (CAF) in a timely manner, leveraging CAF purchases to create jobs as well as economic growth, and streamlining defence procurement processes. The overarching focus of this study will thusly be on the primary element of the DPS; delivering the military capabilities to the CAF according to an appropriate timeline.

To accomplish this, it is acknowledged that delays in the procurement process are a crucial problem. Recently, this is an issue that has been exacerbated by a variety of persistent concerns which will be thoroughly examined in this study. These issues include, but are not limited to: the lack of a pan-governmental performance review of the procurement system as a whole; risk aversion in the public service; changes in costing procedures; the manner in which military requirements are generated; and an overwhelming lack of trust directed towards National Defence. Subsequent to this, the potential impacts of the DPS, coupled with other notable changes to the procurement system, are assessed.

Finally, this study will propose a variety of recommendations regarding the manner in which the acquisition of military equipment can be improved. These recommendations vary from increasing the size and capacity of the acquisition workforce, to the manner in which the DPS should be implemented. Ultimately, the recommendations outlined in this report will help ensure that the DPS' dual objectives of economic leveraging and improving equipment delivery are both met.

Sommaire

L'annonce de la Stratégie d'approvisionnement en matière de défense du Canada, en février 2014, représente un changement massif dans la façon dont le Canada fait l'acquisition de l'équipement militaire. L'intention de cette stratégie est de livrer le bon équipement aux Forces armées canadiennes (FAC) dans de courts délais, de créer un effet de levier des achats des FAC pour créer des emplois, ainsi qu'une croissance économique, et de simplifier les processus d'acquisition de la défense. Presque un an plus tard, la mise en oeuvre de cette stratégie reste un travail en cours.

Le thème central de cette étude est de livrer des capacités militaires aux FAC dans les meilleurs délais, parce que les délais qui se produisent dans le processus d'acquisition sont un problème crucial. Ces dernières années, ce délai a atteint des niveaux sans précédent quand on les mesure à la capacité du MDN de dépenser son budget d'acquisition. Depuis 2007, le MDN a sous-dépensé son budget d'acquisition par une moyenne de 23 pour cent. Pendant les quatre décennies précédentes, la moyenne n'avait été que de deux pour cent. Un changement récent dans les procédures de comptabilisation du gouvernement signifie que ce délai cause au MDN la perte de centaines de millions de dollars de son pouvoir d'achat étant donné l'érosion de ce budget d'acquisition par l'inflation.

Cela est le résultat d'un certain nombre de facteurs, dont notamment, mais sans s'y limiter : des procédures inadéquates de budgétisation et d'établissement des coûts, des problèmes avec la façon dont les militaires définissent leurs besoins, un budget de la défense qui est trop petit pour permettre l'achat de tout ce qu'on veut, un manque de priorités d'acquisition, un manque de personnel d'acquisition et un manque renversant de confiance à l'égard de la Défense nationale.

Cette étude propose un certain nombre de recommandations visant à améliorer l'acquisition d'équipement militaire. Ces recommandations vont de l'augmentation de la taille et de la capacité du personnel d'acquisition, à l'augmentation de la rigueur du matériel militaire, en passant par la mise en oeuvre de la stratégie d'acquisition comme un tout. En première ligne de cette liste, cette étude recommande que la rénovation de la stratégie de défense Le Canada d'abord soit accélérée. Cet examen devrait définir des priorités stratégiques pour le Canada et utiliser ces dernières pour diriger/mener la réduction de l'écart entre le budget de la défense et les capacités désirées, pour ensuite établir une priorité dans les acquisitions futures. En bout de piste, les recommandations décrites dans ce rapport contribueront à faire en sorte que le double objectif de la stratégie d'approvisionnement, soit le levier économique et l'amélioration de la livraison de l'équipement, soit atteint.

Putting the 'Armed' Back Into The Canadian Armed Forces: Improving Defence Procurement in Canada

Introduction

Defence procurement is both complex and contentious the world over. In February 2014, the Government of Canada announced a Defence Procurement Strategy (DPS) designed to reform the way Canada acquires military equipment. Its objectives are threefold; delivering the right equipment to the Canadian Armed Forces (CAF) in a timely manner, leveraging those purchases to create jobs and economic growth, as well as streamlining defence procurement processes.[1] This effort directly builds on commissioned studies by the Canadian Association of Defence and Security Industries (CADSI), the group led by Tom Jenkins and the Aerospace Review. These objectives can effectively be grouped into two efforts: improving the procurement system and increasing the domestic economic benefits of the procurement process.

As of November 2014, the implementation of the DPS remains a work in progress. Many of the final details that will determine the initiative's impact have not yet been defined. So far, the weight of effort has been primarily focused on improving the economic impact of defence procurement; an initiative that bears similarities to the Mulroney government's changes to the Industrial Regional Benefits (IRB) program in the mid 1980's. Then, as now, the desire to increase the domestic economic impact of military purchases was driven by a major recapitalization boom, following a period of minimal procurement and dissatisfaction with the impact of that spending on the Canadian economy.[2]

Similarly, efforts to improve the delivery of military equipment go back a long way. Studies by Parliamentary Committees, academia, former officials, industry groups and the Auditor General, amongst others, have found fault with the Canadian procurement processes, past and present. These reports generally focus on high profile Major Crown Projects (those exceeding $100 million), that have experienced significant problems. The decades-long delay in the Maritime Helicopter and Fixed Wing Search and Rescue (FWSAR) projects; critical Auditor Generals reports into the acquisition of new fighter jets and military helicopters; the lack of compliant bids on the first iteration of the Joint Support Ship and Integrated Soldier Systems projects; and the 11th hour cancellation of the Request for Proposals for Army trucks, come to mind.

This study - which was based on over 50 confidential interviews and a workshop with retired and currently serving acquisition officials, political staff, consultants, and members of the defence industry - will focus on the first concern of the new DPS, delivering the right equipment to the CAF in a timely manner. This focus is driven by an acknowledgement that, delays in the procurement process are the primary problem. It will first outline key factors that have exacerbated this problem in recent years, and then assess the potential impact of the DPS and other recent changes to the procurement system. Finally, the report will offer recommendations on how the acquisition of military equipment can be improved.

The Procurement Context

At the outset, it should be recognized that difficulties with defence procurement are not unique to Canada. Several of Canada's closest allies have attempted significant reforms of their procurement systems. Yet these efforts, which have included major departmental reorganizations, legislated reform and an initiative to outsource acquisitions management to the private sector, have not prevented procurement files from becoming problematic.[3] Cost increases and schedule slips are a worldwide recurring problem, as the nature of defence procurement is inherently intricate and risky. It is therefore unrealistic to expect that defence procurement in Canada can be 'fixed', if 'fixing' is interpreted as multi-billion dollar developmental projects proceeding from concept to final delivery without incurring problems along the way. Instead, the goal should be a procurement system designed to reflect the inherent complexity of defence acquisitions.

Organizations engaged in defence acquisitions in Canada include, at a minimum, the Department of National Defence (DND) and the Canadian Armed Forces (CAF), Public Works and Government Services Canada (PWGSC), Industry Canada, the Treasury Board Secretariat (TBS) and Privy Council Office (PCO), and a diverse array of domestic and foreign firms. One of the current weaknesses is the lack of a pan-governmental performance review of the procurement system as a whole.[4] This may be contributing to a lack of consensus about what exactly has contributed to problems on specific files, and perhaps more problematically, there is a comparable lack of consensus regarding what factors are needed for success. The Tactical Armoured Patrol Vehicle (TAPV) project, for instance, is cited by many as a procurement success, given the relatively quick movement of that file from the identification of a capability deficiency to contract award, without a supplier challenging the process. Yet, despite this success, there is little agreement as to whether it was attributable to the merits of PWGSC's Smart Procurement initiative,[5] the personal attributes of key officials working on the file, the nature of the military requirement, or the procurement's unique market conditions, all of which are posited to have been 'the key factors' leading to success.[6] Currently, an effort is underway to gain more detailed insights into the factors leading to success and failure at National Defence, but the highly unique characteristics of each procurement project will prevent simple generalizations.

Finally, it is important to acknowledge that all defence acquisitions are not the "enduring fiasco"[7] that some reports suggest. Rather, the problems are associated specifically with Major Crown Projects. While they are considered the most significant projects, they represent but a small fraction of the overall number of defence contracts, the majority of these dealing with a wide range of smaller value items including office supplies, food, and spare parts. Major Crown Projects do, however, represent a disproportionate share of contracting, by *dollar value*, and provide much of the Canadian Armed Forces' operational capability – its ships, aircraft and armoured vehicles.[8] It is important, however, to acknowledge that the procurement challenge lies within this small number of very large projects that disproportionately contribute to the Canadian military's armed force.

It is also important to note that some Major Crown Projects have been successful.[9] In the early days of the Harper administration, Canada swiftly procured two airlift platforms, the C130J and C17, as well as multiple urgent operational requirements for Afghanistan, such as: armoured patrol vehicles, tanks,

heavy trucks, Chinook helicopters, contracted aviation support and multiple projects to increase vehicle survivability. The C17 purchase, in particular, has been referred to as a "stunning success"[10], and is sometimes used as a benchmark to prove procurement outcomes have worsened. More recently, the National Shipbuilding Procurement Strategy established, in under two years, strategic relationships with the two Canadian shipyards that will build the next naval and coast guard fleets. More recently, the Halifax Class Modernization/Frigate Life Extension (HCM/FELEX) project - which is regarded as the most expensive and complex project currently in the implementation phase - has also been successful in meeting its Initial Operating Capability on schedule.[11]

Persistent Issues:

While there has been procurement successes, several problems remain, many of which are long standing. In the past, political involvement in the procurement process led to delay, to the purchasing of equipment for which there existed no military requirement, and to the acquisition of weapons systems that proved ill-suited to operational need.[12] Risk aversion in the public service has also been a persistent problem, often leading to the perception that legal concerns and the integrity of the contracting processes have often outweighed the desire for successful delivery of military equipment and to the cancellation of problematic procurements as a default approach.[13]

The uniquely Canadian procurement process that separates procurement and contracting authorities has frequently been cited as a source of unnecessary duplication of effort, additional costs, and a key impediment to the creation of a single point of accountability for projects, which in turn inhibits performance review.[14] These concerns have been a problem in the past, and are likely to remain. Yet, it also seems clear that, since 2007/2008, unique circumstances have emerged that present a new set of procurement problems. It is therefore not certain that these long-standing concerns are the source of these newfound problems. Creating a single point of accountability might help resolve interdepartmental disagreements earlier, better allocate scarce human resources, and eliminate delay attributable to process duplication, particularly for Treasury Board submissions. But, setting aside a capacity /workload mismatch, it is not clear how a single point of accountability would address the key challenges identified in this study. While such an approach might offer some improvements over the current system, it would not be a panacea.[15] This study will therefore offer recommendations that could improve the delivery of military capability within any institutional arrangement.

The Current Problem:

It is clear that there have been significant delays in the defence acquisition program,[16] with some claiming that the length of time it takes to acquire military equipment is now at "record levels."[17] The issue of procurement delay itself is not new; decades'-old academic studies, as well as reports by Auditors General that date back to 1982, cite lengthy procurement timelines as problematic.[18] However, defining delay is difficult, as there are multiple important milestones in an acquisition and there are many ways of measuring the time it takes to complete an acquisition. Furthermore, some reports measure delay across all defence procurements, while others examine only Major Crown Projects, or some subset thereof. Another way of looking at this problem is through DND's ability to make use of its available procurement funds. By this measure, the current problem is more clearly historically unprecedented. Beginning in 2007/2008, the Government of Canada has faced an

exceptional degree of difficulty in moving the defence capital program. Over this period, an average of 23 percent of the available Vote 5 money supplied by Parliament, (a combined $7.2 billion) was not spent as intended.[19] Prior to this period, dating back to 1973, the historical average for Vote 5 not being spent as intended was 2 percent (see Figure 1).

A change in costing procedures that now sees projects established in fully escalated Budget Year dollars (as detailed below) exacerbates the problem. Defence procurements are no longer protected from the loss of purchasing power that arises from project delay. This change means that procurement delay is now far more consequential than heretofore, as it now automatically erodes the purchasing power of project budgets in a way that it did not historically. Not only is the share of unspent procurement funds since 2007/2008 unique, so too is the severity of its impacts.

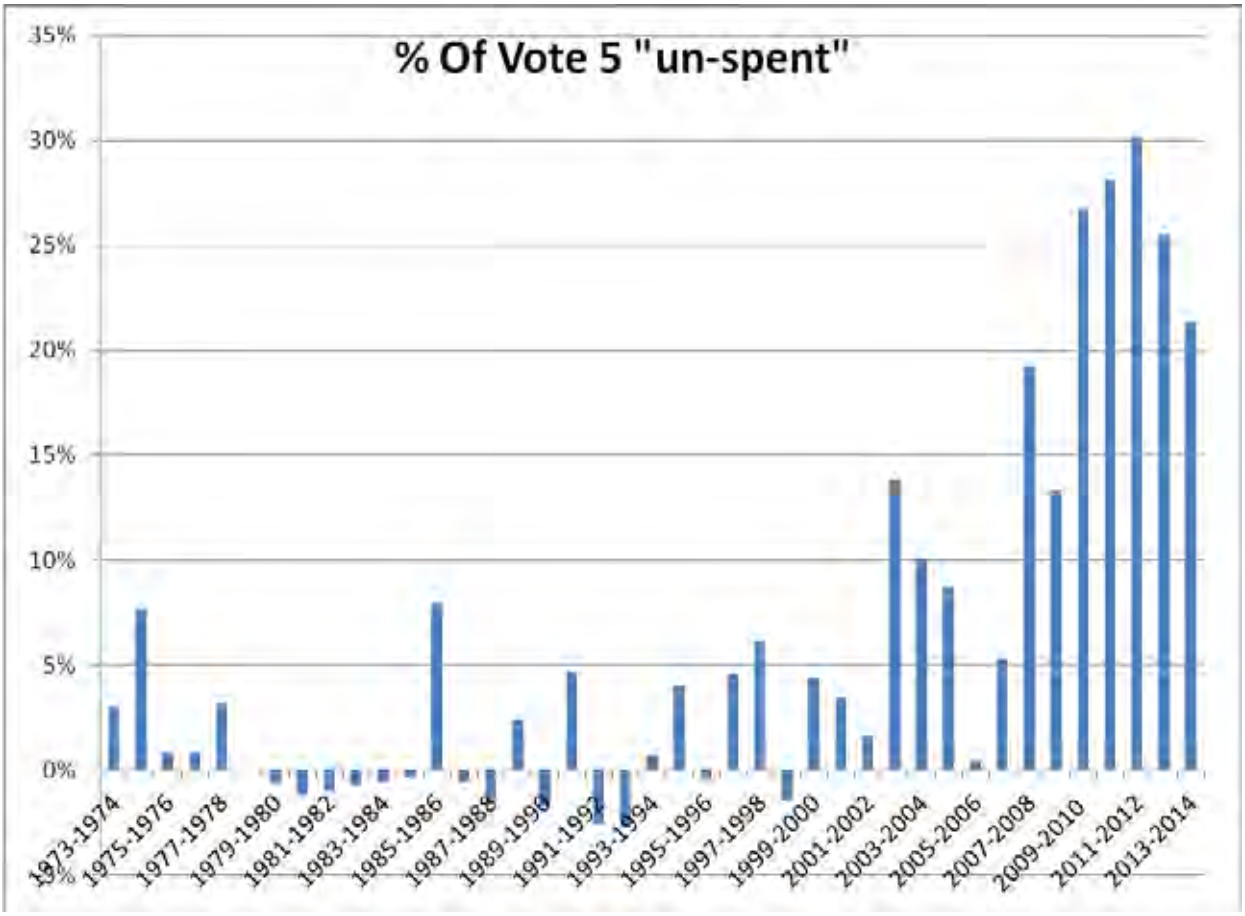

Figure 1: This graph shows the percentage of DND's Vote 5 allocation in the Estimates that was not spent as intended. This includes all: funds transferred out of the Vote; residual lapses; and any funding carried forward to future years or re-profiled. Canada, Receiver General of Canada. The Public Accounts of Canada, Vol. II. Ottawa: various years.

Procurement Workload

One of the most notable changes to the procurement landscape in recent years is the significant increase in the workload. Budgets 2005, 2006, and the Canada First Defence Strategy (CFDS) provided funding and policy coverage for the largest recapitalization program since the Korean War. Notably, the 2005 Budget which, of these three documents, prompted the most significant budgetary change,

earmarked substantial new funds for capital procurement purchases that began in 2007/2008 – coincidentally the same year that DND began to under spend its budget. Interestingly, the CFDS specifically, has been referred to as both a blessing and a curse. On one hand, it demonstrated the major advantage of Cabinet approval for a wholesale re-capitalization program but, on the other hand, it also gave rise to the huge challenge of managing the multiple, large and complex procurements. This state of affairs was enabled by the federal government's shift to accrual accounting in the early 2000's, which provided an accounting regime that permitted multiple large projects to proceed simultaneously. The old cash-based accounting system required careful cash phasing and sequential planning for the largest procurements. Consequently, each of the three services (the RCN, the Army and the Air Force) effectively took turns acquiring major fleets, because DND had insufficient financial resources to advance more than one major project at a time. [20] Accrual accounting, which only charges an annual amortization amount against the Defence budget, means that the services no longer need to alternate when making major acquisitions.[21] As a result, there was roughly a threefold increase in the number of Major Crown Projects reported by DND between 2000 and 2011 (See Figure 2). [22] There are currently 13 projects worth a billion dollars or more underway and many of them, including shipbuilding, are extremely complex.[23]

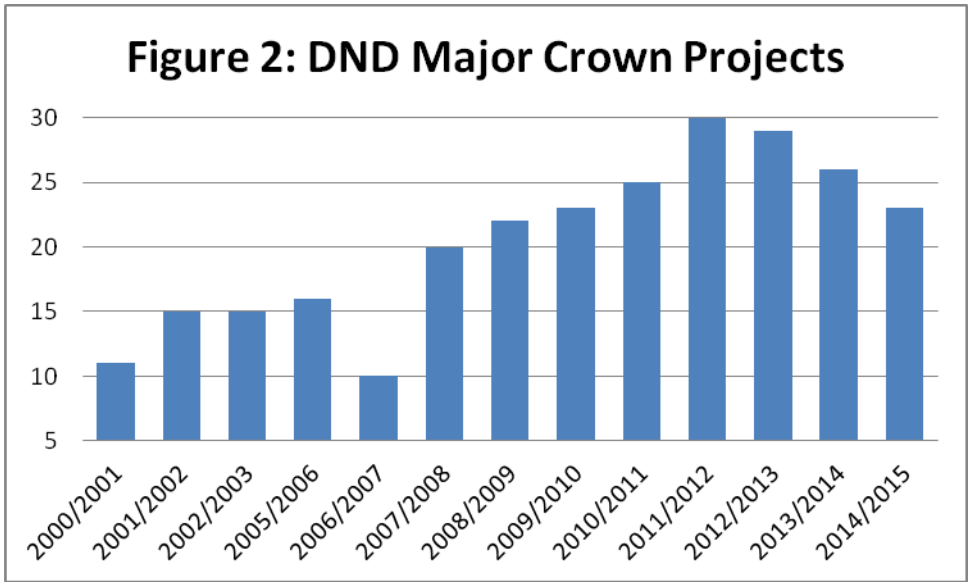

Figure 2: This graph shows the number of Major Crown Projects reported by DND in its annual Report on Plans and Priorities. Canada, Department of National Defence. Report on Plans and Priorities, Status Report on Transformational and Major Crown Projects. Ottawa: various years.

Not only has the number of projects increased over the last several years, the reporting requirements for these capital projects have increased by 50 percent over the last five years alone.[24] In part, this stems from the introduction of new Treasury Board policies on Investment Planning and Project Management as well as on enhanced expectations about accountability. The former has required more complicated long term planning of investments in assets and acquired services, including documentation for any changes, and an increased focus on life-cycle costing.[25] Developing internal governance structures to match Treasury Board expectations has proven difficult. The latter policy has required complex assessments of DND's overall ability to manage projects, as well as risk and complexity assessments for each project.[26] Even more reporting requirements have been

added as a response to the procurement difficulties highlighted above, and because of the introduction of secretariats for shipbuilding, fighter jets and FWSAR.

This workload will only increase further, since DND's Investment Plan 2014 was approved with an Organizational Project Management Capacity Assessment (OPMCA) rating of 2, down from the previous Level 3 rating. The assessed capacity level establishes the project complexity and risk threshold above which ministers must seek approval (expenditure authority) from Treasury Board Ministers. For example, the minister of a department with an OPMCA rating of 1, can provide expenditure approval for Level 1 projects, but must seek Treasury Board approval for all projects assessed as 2, 3 or 4. As a result, downgrading DND to a Level 2 rating will require DND to seek Treasury Board approvals for 'Evolutionary' projects (those with a rating of 3) that could have previously been approved by the Minister of National Defence, therefore increasing the work required to secure approvals for more complex and risky projects.

Procurement Capacity

Set against this significantly increased workload, there is simply not enough capacity in the acquisition workforce to manage it. When the reduction in defence spending began in 1989, capital procurement was one of the first areas to suffer. As a result, the Canadian government experienced close to a decade of limited defence acquisitions. This procurement 'holiday' left the current workforce with limited experience in complex procurements, particularly at the middle management level.

Program Reviews in the 1990's exacerbated the procurement situation when the government "significantly reduced its own capacity to manage...projects".[27] The key acquisition departments - DND, Industry Canada and PWGSC - were all downsized substantially, and many of the most seasoned acquisition officials left with early departure packages. Those who remained had fewer opportunities to practice their skills than before, given the new and relatively sparse rate of acquisitions. This downsizing hit the shipbuilding sector particularly hard, as "the absence of any large-scale building program for over a decade has seen most, if not all, of the knowledge base and practical leadership experience developed during the last shipbuilding program – the CPF – disappear."[28] The fact that the Canadian Surface Combatant project is currently staffed at one tenth the level that the Canadian Patrol Frigate Program was, has made this situation worse.

The Materiel Group in DND (ADM Materiel (ADM (Mat)) was particularly hard hit by this reduction – the result of a combination of pressure to reduce overall defence staffing, a specific desire to reduce the size of National Defence Headquarters, and an assumption at the time that there was significant overlap with PWGSC regarding procurement, rather than contracting, functions. For example, in the late 1980's roughly 9,000 people in ADM (MAT) worked in roles that the organization still performs today. In 1989/1990, DND spent roughly $3 billion on Vote 5, so there were roughly 3,000 officials in ADM Mat working on each billion dollars of capital projects.[29] Because of downsizing in the 1990's, ADM (MAT) was reduced to 4,200 positions by 2003/2004. That year, DND spent roughly $1.6 billion, for a ratio of approximately 2,600 staff per one billion in capital. By 2009, staffing at ADM (Mat) had increased to 4,355, still resulting in vacancy rate of 23 percent or more in its equipment project

offices.[30] That year, DND spent $2.4 billion on Vote 5, meaning that the ratio of acquisition staff to workload had dropped to roughly 1,800 staff per billion dollars of capital projects. As this short synopsis shows, ADM Mat is now expected to manage almost twice the workload, by dollar value, than they were managing two decades ago.

Auditor General Reports in 1998 and 2004, following Program Review, noted inexperience, inadequate training and insufficient staff as problems in capital acquisitions at those points in time.[31] Staffing at ADM (Mat) increased to 4,355 by 2009, but even this growth resulted in vacancy rates of 23 percent or more in its equipment project offices.[32] As a result, in 2010, DND acknowledged that "HR capacity remains one of the top risks to the delivery of the capital equipment program."[33] However, shortly after acknowledging this problem, the situation worsened due to the Strategic Review and the Deficit Reduction Action Plan (DRAP), which reduced the Materiel Group by 400 positions through the end of 2014/2015. The reduction occurred despite Treasury Board authorization for growth in Project Management capacity at National Defence.

Internal DND assessments have expressed concern that the new DPS changes may exacerbate capacity and resource demands, by adding additional review processes and new reporting structures that will increase workload. In particular, evaluations in support of the leveraging components of this new strategy are anticipated to be complicated and labour intensive.[34] Finding staff with the right skill sets to conduct an expanded analytical and assessment function at Industry Canada is anticipated to be a major challenge, even with additional resources.[35]

The disparity between workload and capacity since 2007/2008 lies at the heart of much of the procurement delay experienced present day. It is simply unreasonable to expect that fewer people can cope with a significant expansion in workload.

Budgeting

Beyond the previously noted discrepancies, several other issues have presented considerable problems. Many of the most significant of these relate to project costs and budgets. While it is often asserted that defence projects are subject to cost overruns, this misrepresents the problem, since projects cannot exceed expenditure approvals. Rather, the key problems relate to the adequacy and accuracy of initial cost estimating and budgeting, subsequent cost escalation, as well as to the public discussion of these costs.

Program Affordability:

The CFDS financial commitment, relative to its desired capability, has been judged insufficient since its release.[36] Recently, the defence strategy was assessed as "neither affordable nor viable in today's fiscal reality."[37] In particular, the adequacy of a two percent defence escalator is a major point of contention, as some former officials argue that the force structure outlined in CFDS required an annual budget escalation of four percent.[38] By this measure, CFDS was underfunded from the moment of its release.

This was acknowledged in the *Report on Transformation 2011,* which sought an additional $1 billion annually to bolster the capital plan.[39] The lack of affordability of DND's long term investments is one of the reasons that its Investment Plan, which is required by Treasury Board, failed to receive approval for more than a year after DND's 2009 Investment Plan expired.[40]

This disconnect appears to result from a lingering tension over whether the CFDS funding was inadequate, or if the defence ambition contained in the plan was excessive. According to Dan Ross, former ADM (Mat), "the reality is there was only so much money, it was divided out, to the demands. No one, no Army, Navy, Air Force project got everything they needed. So they had to live within their means and manage expectations within their budget."[41] His statement indicates the CFDS was based on the funding available, not driven by the desired capability, and DND was expected to work within the budget provided. There is also the implication that the CFDS failed to prioritize its major investments. Since the CFDS did not articulate any geostrategic priorities that might indicate the priority attached to particular investments, stating instead that National Defence "needs to deal with the full range of threats and challenges to Canada and Canadians,"[42] this is not surprising.

Some view that CFDS clearly specified the amount of funding available, and DND was expected to live within its means. At the same time, an operational perspective has persisted that the document, and the discussion with Cabinet that preceded it, required the portfolio of capabilities specified in CFDS, but inadequate funding was provided to deliver that capability. Regardless of which perspective is most accurate, the fiscal resources assigned to defence should match the defence plan. At present, they do not. A lack of articulated strategic priorities has therefore made resolving the gap between funding and capabilities more difficult.

Project Costing Accuracy:

An additional problem is that many of the project budgets built into CFDS were established without the benefit of substantial costing resources. Thus, indicative estimates with low levels of confidence in many cases turned into 'capped' project budgets. This problem has been exacerbated by the process of removing any caveats about the confidence levels of early estimates from both internal briefings and public discussions of costs.[43]

Accurate costing has also been hampered in some instances by a lack of engagement with industry for price and availability quotes prior to establishing firm budgets. With the Family of Land Combat Vehicles project, for instance, DND was directed to delay by 10 months engagement with industry for such consultations. The delay resulted in project officials being unaware of a $760 million variance in potential project costs.[44]

Because of persistent schedule delays, yet another problem has arisen, that of the perennial expiration of project definition funding which is assigned based on the expected duration of the project definition phase. Considering that simply keeping project offices open can cost more than $10 million annually,[45] chronic delays have led to inaccuracies in this element of project costing. Because offices are kept operating longer than anticipated, they keep running out of money for the definition phase before the

phase is complete. Consequently, this has required DND to return to the Treasury Board to secure approval for additional funding, a process that takes several months. The result? A self-perpetuating cycle of delay and insufficient definition funding.

The challenge of providing accurate life cycle costs has also proven difficult to communicate publically. The switch to announcing the cost of contracts for both acquisition and In-Service Support, which began with the Maritime Helicopter, has led to significant sticker shock, as long term costs not previously associated with procurements are now announced at their outset. This situation worsened when a contentious relationship emerged with the Parliamentary Budget Officer and later the Auditor General on the life-cycle costing of the F35.[46] Although it later became clear that, expressed on a comparable basis, the respective life cycle estimates were far closer than they initially appeared, the debate over F35 costs created a negative perception of DND's ability to conduct and communicate cost estimates. This perception was amplified within government due to the lack of trust in DND, as discussed below.

Project Budget Escalation:

Finally, the most significant problem with project budgeting is the switch to establishing project budgets in Budget Year (BY) dollars. Under this practice, project budgets are set in fully escalated dollars with all adjustments for inflation included, based on estimated completion dates. Previously, budgets were established in Constant Dollars and then escalated immediately prior to going to contract. Therefore, schedule slippage was not historically problematic from the standpoint of a project's buying power, as budgets were adjusted to account for any changes over time. In the past, delay meant incurring increased costs of operating old equipment, obsolescence and in some cases, capability gaps. Those concerns persist today, but more pressing is the fact that delay now erodes the buying power of the project's budget in a way it did not previously. It is this change that has made delay the single most important factor affecting procurement.[47] According to CADSI, "the deleterious impact of setting initial budgets in BY dollars is momentous, in the order of 20-25% over the project life."[48] As a result, schedule slippage today is more consequential than schedule slippage was historically. The recent PBO report on Arctic Offshore Patrol Ships, for instance, shows that each year of delay could result in one less ship being affordable, due to lost purchasing power.[49]

Requirements Generation and then Communication

In addition to issues with the costing of projects, DND's process of generating military requirements has come under scrutiny. Two concerns persist. The first is that defence requirements are gold plated, in that they specify a need for capabilities that exceeds what is actually necessary. The second is that requirement specifications are 'wired', in that they are directed towards a specific platform, and not towards general capabilities. While military requirements have long been questioned by the central agencies and even Cabinet, the current manifestation of this concern has been more problematic. [50] In 2009, PWGSC contracted the National Research Council to independently review the Statement of Operational Requirement (SOR) for FWSAR. The review concluded that the original requirements document was "over-constrained"[51] in a way that limited the number of potential industry solutions.

As a result, the Royal Canadian Air Force was required to re-write its SOR. Noting a different type of problem, the Auditor General's report on Helicopter acquisitions found that defence officials had over-stated the degree to which the Canadian requirements were 'Off the Shelf.'[52] More recently, fighter secretariat set aside the Statement of Operational Requirement for that project, and pending the outcome of its options analysis, the SOR may be reviewed.[53] In each case, resolving the issue with requirements has added significant time to the procurements. Recently, the Chief of the Defence Staff acknowledged the need to make progress on this issue, by noting that "there is a pressing need to work closely with other government departments and secretariats to ensure military operational requirements are widely endorsed and injected in a timely fashion into national procurement projects to ensure timely advancement of these efforts."[54]

The root causes of this SOR problem are manifold. In part, they stem from the inexperience described above. Writing requirement documentation is difficult, and writing them well and/or on a performance basis is even more complicated.[55] A perception has been created that the process of writing requirements became less rigorous around the Afghan acquisitions, and that those practices have remained. There is also a fundamental cultural and communication issue between the military and the rest of the bureaucracy. For instance, the military does not believe that the operational imperatives that drive its requirements are understood. On the other hand, many in the rest of the procurement system believe that DND's requirements ask for more capability than necessary, exceed the available funding and are designed to deliver preferred platforms. There is a perception that the force development process remains too heavily dependent upon the personalities of senior commanders, rather than on a rigorous long-term force development process. Many believe that this situation was exacerbated by the erosion of a strong internal challenge function for requirements within National Defence. This arose in part because the Vice Chief of Defence Staff no longer performs as strong a role at policing service requirements, due to the position's increased span of control, and also because of the elimination of the strong operational challenge function that previously existed in the Deputy Chief of Defence Staff position. The ability of senior leaders to challenge the requirements generated by their staff has been significantly attenuated by the procurement holiday of the 1990's. With little experience working on projects themselves, because projects were few and far between, the current senior leaders are less able to provide critical insight than did their predecessors.

The Fundamental Issue: Trust

Finally, there is a strong perception that "all trust and faith between players in the system has been lost,"[56] a viewpoint that has been driven by the issues addressed above. While not the only cause, these issues were exacerbated by the F35 project which worsened already strained relationships.

At the political level, trust in the acquisition system has been significantly degraded as a result of multiple failed procurements and negative Auditor General Reports. Part of the reason that senior decision makers are requiring increasing levels of documentation is that, whereas in the past they were confident that due diligence was being done by the bureaucracy, this confidence is no longer there. Much of this mistrust is often directed towards National Defence as a result of the aforementioned

problems with requirements, costs and downplaying of project risks.

The relationship between DND and other government bureaucracies has also worsened as a result of the notion that the rapid acquisition of wartime equipment, viewed as a success by DND, came at the expense of other government priorities and concerns. These other departments viewed as inappropriate the level of effort exerted by DND to move wartime requirements in what they considered a peace time context. Stated differently, during operations in Afghanistan, military requirements rightly took precedence over interdepartmental concerns, and their prioritization expedited capability delivery. However, because of this the non-defence components of the acquisition bureaucracy felt railroaded and believed DND asserted undue influence over the procurement process during this time period. This also created what many view to be unrealistic expectations about how quickly peacetime procurement can proceed. This situation is epitomized by completely divergent views over the process for receiving Treasury Board approvals of defence procurements.

In DND, the process is often described as 'brutal', and one that subjects military projects to nitpicking from an ever-changing pool of analysts that ask too many 'first-principle' questions. The Treasury Board Secretariat's perspective, shared by most outside defence, is that this process provides a common sense test of a how reasonable a project is, something DND has at times made more difficult by not performing the due diligence required to secure approvals.

Finally, the relationship between industry and the bureaucracy has similarly been strained. Industry has viewed the government as an unreliable partner lacking in an understanding of private sector imperatives and showing itself to be inflexible in its working arrangements. Consequently, many believe that a project's success depends on getting the right government official on a file. Furthermore, the introduction of an In-Service Support Contracting Framework based on a single point of accountability with Original Equipment Manufacturers has created a significant degree of tension with some segments of Canadian industry.[57] This effectively turned a portion of the industry, previously supportive of DND's procurements, into critics of the process. The bureaucracy, on the other hand, has had to deal with the impact of what they see as a scorched earth policy exercised by losing bidders.

Improvements and Further Mitigations

The Defence Procurement Strategy:

The Defence Procurement Strategy launched in February contained extensive changes aimed at improving the domestic economic benefit of defence purchases. As these changes have yet to be implemented, their impact on the delivery of military equipment is, at present, impossible to assess. The three largest non-leveraging components of the DPS are the same as those used for the NSPS and PWGSC's Smart Procurement initiative: increasing engagement with industry; seeking the independent advice of third parties; and creating effective procurement governance. The first component continues the process of early and frequent industry engagement as well as the publication of the Defence Acquisition Guide. The second creates an independent third party within DND (currently led by Keith Coulter) who reports to the Deputy Minister. The third aspect has seen the creation of a permanent

Working Group of Ministers from National Defence, Industry Canada, and International Trade, chaired by the Minister of PWGSC. The Working Group will be supported by permanent Deputy Minister and Assistant Deputy Ministers Committees, which will include representation from the TBS and PCO. The entire governance structure will be supported by a Defence Procurement Secretariat, housed within PWGSC. Public Works believes that once these structures are in place and these principles are universally applied, they will provide the necessary changes to improve defence procurement in Canada.

In particular, the change to procurement governance is anticipated to be beneficial with the move to "joined up"[58] decision-making. The modification is designed to facilitate pan-governmental briefings and decision-making on key issues, replacing the previous method of stove-piped departmental processes that required resolution of issues at the highest level. It is hoped that the new approach will allow for the timely resolution of issues as they emerge, and at the appropriate level. So far, some DND officials have indicated improved access to senior officials.[59]

Despite these claims, concern has also been expressed that this new arrangement may introduce complications that slow down procurements.[60] At this point in time, however, the roll-out of the DPS has been designed so that it does not significantly slow down in-progress procurements. Due to this, the changes are being implemented incrementally, without waiting for 100 percent solutions. This has meant that interim value propositions, based on industry suggestions, have already been used before Industry Canada could fully develop the concept and publish a Value Proposition guide. It also means that the first Defence Acquisition Guide was published on schedule, with the understanding that it would be revised over time. The slow implementation, which has some in industry grumbling about delay, is an indication that the goal of improving timely delivery of equipment has thus far not been superseded by the leveraging reforms.

There is also a need to temper expectations about exactly how much change will come with the DPS. At present, the FWSAR, fighter replacement, and NSPS projects already have secretariats, and the committee of sponsors' governance structure for HCM/FELEX has elements of that approach as well. Thus, at present, the majority of the defence program, by dollar value, is already in a secretariat arrangement. There is a strong perception in DND that the existing secretariats have so far created additional work, and with mixed results in terms of outcomes. NSPS was highly successful in facilitating an uncontentious selection of the two shipyards. The same governance approach has not resulted in timely decision-making about the procurement strategy for the Canadian Surface Combatant, which has been waiting two years for government approval. Further, while the fighter secretariat is acknowledged to have increased the rigour of, and confidence in, the work supporting that project, the Government has yet to make a decision about a fighter capability. This is significant because it has been 33 months since the Government announced its response to the Auditor General's 2012 report.

While DND may have legitimate concerns about these changes to the wider GOC procurement process, there is a strong perception that it has limited ability to criticize the actions of others until it delivers a streamlined internal procurement process itself. One attempt at this was completed in 2009, when DND "conducted a thorough review of internal practices and applied the Treasury Board risk based

approach to project approvals… resulting in greater efficiency."[61] Another endeavour to make further improvements to the process was launched in 2012, but the impact of this effort is not yet evident.

Two new initiatives under the DPS that have some promise is the increase in the contract delegation to DND and the creation of a Defence Analytics Institute (DAI). The former would see the current $25,000 contract delegation to DND increased; possibly as high as a $5 million delegated authority for goods. If this target was met, it would allow DND to contract on its own for 99 percent of its goods, reducing the time and effort involved in coordinating with PWGSC officials for contracts that currently exceed DND's delegation. While DND may not obtain a full $5 million delegation, any increase will significantly streamline the acquisition of lower value goods. The impact of this measure will be maximized if DND acquires additional contracting staff, as was reportedly pledged by the Minister of PWGSC. According to DND officials, the move will be beneficial in any event, given the net savings that will accrue with lower coordination requirements.[62] The latter creation of the DAI has the potential to significantly improve the understanding of the Canadian defence industry and the international defence acquisitions marketplace. The current understanding of the marketplace is weak, and improving upon it is required to maximize the impact of the leveraging initiative.[63] Establishing an effective governance regime, and ensuring that the DAI's efforts complement existing analytical capability inside the Government of Canada, will be keys to its success.

Improving Trust:

While not explicitly stated, the change in procurement governance appears to be a reaction stemming from the mistrust of National Defence's role in the acquisition process, as all aspects of the governance structure involve a significant shift to PWGSC leadership on procurement files. Hopefully, this shift will help restore Government trust in the acquisition process.

Though this move may improve the Government's confidence in the bureaucracy, it has further strained the relationship between DND and PWGSC. This highlights the need for the DPS to produce tangible improvements in terms of delivering military equipment to retain DND's support for the changes. In other words, the DPS changes will be most effective if they are implemented as a comprehensive package of changes, rather than as individual initiatives.

The impact of the new governance system will take years to come to fruition. It will take considerable time for the legacy projects initiated before this new construct was created to move through the procurement process.

Entirely new projects that will benefit from these changes from their inception will take a number of years to progress to Full Operational Capability. Because of this, it could take a decade or more to know whether these changes are having the desired effect. In the short term, the greatest possible benefit for DND in the DPS is likely the prospective increase to their delegated contracting authority.

National Defence could help itself further by making an effort to create stronger relationships with the central agencies. Due to the size of its budget, DND is perennially viewed as a fiscal pressure to the Crown. With the significant expansion in its budget beginning in 2005, and particularly the shift to

accrual accounting, this perception has only increased. The extension of recent efforts by DND to familiarize the small pool of central agency officials that deal with procurement, and ideally proactively seconding defence officials into the central agencies, could produce long term benefits for the defence program.

Finally, the efforts to strengthen industry engagement should help foster a better relationship between the bureaucracy and industry, particularly where suppliers are engaged to help develop bid evaluations. This holds true when examining what happened with the NSPS shipyard selection, for example. Moreover, this could be further strengthened by improving the process of supplier debriefs after contract award. At present, there is a strong perception that losing bidders are simply informed that they lost, whereas more detailed, constructive feedback could improve industry's confidence in the system.

Similarly, the leveraging aspects of the DPS presents an opportunity to restore the relationship between DND and some of the domestic sectors of the Canadian defence industry that were disaffected with the shift to Single Point of Accountability with the OEM. The most promising sign to date of the potential for collaboration between government and industry is the committee of sponsors governance arrangement established for the HCM/FELEX project. This project has seen key government representatives, as well as the key suppliers, work collaboratively to resolve scheduling and other issues.[64] Internal audits have identified this as a good practice, and this relational contracting approach is one that should be emulated where possible.[65]

Ultimately, restoring trust in the procurement system will require a track record of success. Only significant demonstrations of competence can re-establish confidence in the procurement system.

Improving Requirements Generation:

In order to fully restore lost trust, the multiple efforts initiated to improve the generation and communication of military requirements must bear fruit. In late 2012, DND mandated the Defence Capability Board to provide an enhanced challenge function in DND's internal procurement processes. The new DPS has focused much of its efforts on improving the generation of military requirements, attributing issues with cost and delay to weaknesses in this area. In announcing the new approach, The Honourable Diane Finley stated, "requirements are too complex. Too often they appear to be set to achieve pre-determined outcomes. And industry is not engaged early enough. Because of this, the process is costly and complicated, and we take too long to make decisions."[66]

As part of the DPS, DND has appointed Keith Coulter, a past member of the independent panel as part of the Fighter Secretariat, to head a group tasked with establishing an 'internal requirements challenge function' at DND. This challenge function is intended to improve the rigour of the requirements generated within DND before they are passed on to the rest of the acquisition workforce. By having it report to the Deputy Minister, the new group provides a challenge function independent of the military chain of command. This builds on past efforts within National Defence to improve the process used to development requirements, and to better ground them in operational research. Officials outside of DND have acknowledged that these changes are improving the quality of requirements

documents. This has already precipitated a cultural shift in some elements of National Defence, as there is recognition that the people who are best at moving files are those who do not view external review or challenge as yet another obstacle.

The DPS focus on engaging with industry should also help improve the process of generating requirements, particularly by providing a better check of their affordability. Industry engagement has increased significantly over the last several years through industry sessions for individual projects, and events like the CADSI Outlooks, and it is now increasing further through the Defence Acquisition Guide. The industry engagement provides opportunities for DND to gain a better understanding of the capabilities that exist and of their cost which can improve the match between requirements and budgets. While there has been a significant change in government attitudes to interacting with industry, concern persists regarding the ability for this to happen outside of structured formal sessions. This points to the apparent limit of the extent to which the Crown can engage with industry while adhering to the principles of openness, transparency and fairness which restrict forthright, two way exchanges. At the same time, the success of these endeavors also relies on honest assessments of what is feasible by industry.

Similarly, and with some success over the last number of years, the procurement system has been attempting to move towards fewer mandatory requirements and less focus on technical specifications, in favour of performance-based requirements and the increased use of Off the Shelf (OTS) technology.[67] The ability to generate performance -based requirements is tied to the aforementioned capacity challenges, as these specifications are more difficult to articulate than are technical specifications. Some DND officials also believe there is a limit to the extent to which they can shift to performance-based procurement without simply incurring additional engineering changes later on to adapt equipment to Canadian specifications. Even if the effort to generate performance-based requirements succeeds, PWGSC will still need to contract for performance, which is also more difficult than contracting for technical specifications. The desire to move to OTS requirements is longstanding, as it was directed as policy in the 1992 Defence Policy Statement.[68] The acquisition of the C17 is likely the only Major Crown Project that was completely OTS, and it is doubtful that many other legitimate OTS procurements currently exist. What is more likely is the use of OTS components or systems. Nevertheless, as the Auditor General's assessment of military helicopters noted, integrating those systems can still be extremely complicated.

Finally, there remains a need for these more rigorously determined requirements to be communicated to the rest of the bureaucracy and the Government. In the past, DND has faced significant difficulty in communicating its military requirements to the wider bureaucracy through which its projects must pass because of a difficulty in articulating requirements in a manner that is easily understood by public servants who have a limited understanding of defence issues. Strengthening defence ties with the rest of the bureaucracy could help in this regard. Increased use of technical briefings to discuss these and other aspects of procurements with the public would also facilitate a greater confidence in defence requirements.

Improving the Match between Budget and Ambition and Costing

Lord Levene's (United Kingdom) Defence Reform attributed the enormous gap between Britain's defence program and its defence budget to a 'conspiracy of optimism' and a culture of 'entryism,' whereby projects were launched without adequate financing as well as unwarranted confidence about the ability to rectify these problems at a later date.[69] Correcting the disconnect that occurs between resources and ambition is considered the primary goal of British defence reforms. Given that similar factors appear to be present in Canada, resolving the mismatch between funding and capabilities must be the key focus of the renewed CFDS.

If no additional resources are made available to DND, difficult decisions will have to be made regarding the elimination or significant scaling down of some planned procurements in order to make the overall program affordable. This will likely require revisiting the current balance between land, air, maritime, and special operations forces, their joint enablers and the amount of expeditionary capability that is retained across the components of the CAF. Conducting such an assessment in support of a strategic re-assessment of the defence capabilities that are needed to support government objectives would allow for a better allocation of the defence budget to be made across a smaller and better prioritized portfolio of defence capabilities.

If it is to place DND on a secure financial footing and restore trust in its procurement plans, DND must prioritize its defence capabilities and build financial flexibility into its Investment Plan. This effort is already partially underway as part of the Capital Investment Plan Program Review (CIPPR) which will prioritize and move forward for Treasury Board approval a select group of projects from the Defence Acquisition Guide. The process of rationalizing demand against the available funds will then be repeated every six months. This will support the efforts of DND's new Third Party Challenge Function for projects and associated resource allocation, as well as build on past efforts to strengthen resource allocation through the introduction of the Investment Management Resource Committee, and the enhancement of the Defence Capability Board's mandate to challenge project affordability. [70]
These efforts must be supported by better cost estimates and improved communications regarding those costs. Following the Auditor General's reports on helicopters and fighter jets, the TBS developed a generic Life Cycle Cost framework to apply to all military acquisitions.

As of early 2013, DND was still attempting to implement a lifecycle costing approach for all projects, and had only just hired additional staff to conduct the analysis.[71] Developing a common basis for life cycle costing that can be accepted and adopted within DND and across Government should help prevent high profile disagreements over costs. Much of the controversy created by the PBO and OAG reports concerning the replacement of Canada's fighter jets was the result of different approaches to life cycle costing.

This mirrored incongruent costing practices within DND with respect to escalation and capability improvement factors, infrastructure estimates, and contingency funds. Costing discrepancies can be corrected by creating common costing methodologies and standards across government acquisition projects. [72] In addition, these standards must include project contingencies that are

appropriate to the nature of each project as well as to the realities of the Canadian procurement system. The most important element of this system is the practice of providing no additional escalation of project budgets after they are established, irrespective of how much delay and loss of purchasing power occurs. If project budgets are to be fully escalated initially, then project contingencies must be increased to account for the likely loss of purchasing power.

These problems continue to be exacerbated by an enduring lack of power the PBO has in acquiring relevant costing information from the Government of Canada. For instance, in its report on Arctic Offshore Patrol Ships, the PBO stated it was unable to obtain sufficient data from the government to conduct a detailed bottom-up analysis, like the one undertaken by the government and the shipyard.[73] After refusing to release project Statement of Requirements and other data, the government then criticized the PBO for relying on "erroneous data."[74] Such disputes needlessly undermine confidence in the procurement system, and should be avoided. A less adversarial approach to data sharing between key government departments, the AG and the PBO would likely improve the quality of information available for independent cost evaluations. In turn, this would reduce the amount of conflict that would arise from the use of different data. Additionally, confidence would improve in cost estimates, and better explain and contextualize complex project budgeting.

The fundamental tenets of the DPS - industry engagement, third party review and the new governance regime - could all affect the costs of defence procurement. It is therefore essential that any change to the purchasing power of defence projects occasioned by the DPS be accounted for. Additional industry engagement sessions, contracts with third parties and supplementary project management costs associated with the new governance regime must all be accounted for in project budgets. Furthermore, there is a need to understand the cost implications of the new leveraging strategy. Past studies have found that industry imposed premiums of between 13 to 22 percent for administering the previous, less complicated IRB's associated with procurements.[75] As the leveraging strategy centers on tailored Value Propositions with more specific deliverables that comprise a default 10 percent of the bid's evaluation, this could change. Any alteration in the costs associated with the transition to the new ITB program must be factored into revised project budgets accordingly.

Improving the Match between Workload and Capacity:

DND's program not only exceeds the financial resources to implement it, it also exceeds the human resources needed to manage and move the capital program. The capacity shortfall simply means that military services do not have a sufficient number of staff with the proper training and experience to effectively resource their own projects. Similar dynamics also exist in the Material Group. Internal documents show that the situation poses a "significant risk to program execution."[76]

The forthcoming prioritization outlined above should help improve the current situation. Previously, all capabilities were treated as priorities, and that resulted in slow movement. It is probable that prioritizing would better allow the Materiel Group to focus its resources more effectively on a short list of high importance projects. The impact of this change would be maximized if there were a corresponding attempt by the CAF to assign staff according to project priority, rather than by service.

Currently, positions are assigned to projects by the military services without consideration for a prioritized DND/CAF need. A change for the better would see CAF members assigned to work on non-service specific tasks, such as Treasury Board submissions, based on jointly defined priorities.

A number of steps have already been taken to make the best use of the existing acquisition workforce. Several years ago, the Materiel Group created a centralized pool of complex procurement specialists that could be allocated to projects as needed. DND has engaged in a number of efforts to professionalize its workforce, most recently through the Project Management Competency Development Initiative. The initiative was created to establish a formal training framework to align DND's project management with the Treasury Board's Project Complexity and Risk Assessment system.[77] This past year, the University of Ottawa's Telfer School of Management created an Executive MBA program that focuses on Program Management and Procurement - the only one of its kind in Canada - modeled on an Australian program that had been providing training to Canadian acquisition officials. There have also been efforts to create exchanges with allied procurement agencies, and more recently between Government and Canadian industry. There is always significant room for improvement, but at a minimum, this should include increasing the funding available for training that had been restricted as part of DND's reduction in Vote 1 operating funds.

Over the past several years, the government's acquisition system has reacquired previously lost experience with complex procurements. Improvements could be made in order to further foster this knowledge gain by increasing the time that qualified staff work in acquisition roles. This could come as part of the wider changes recently recommended for the Public Service, changes that would give staff, particularly at the middle management level, time to develop subject matter expertise by having them stay in positions longer. Currently, the system is characterized by overly frequent rotations and movement.[78] For the military, this could include changing the normal posting cycle in order to lengthen the time spent in procurement positions, thereby providing better continuity and a reduction in staff turnover. Ideally, staff movements could be synchronized with key project milestones. Over the long term, creating a dedicated non-command, acquisitions career path should be examined for the Canadian Armed Forces.

If there exists a genuine desire to improve the timeliness of military equipment procurement, increasing the size and capacity of the acquisition workforce must be a priority. It is interesting to note that the American Department of Defense is currently expanding and professionalizing its own acquisition workforce. This effort continues despite the fact that the demands on the workforce have recently decreased because of the cancellation of a number of large capital acquisitions due to the Budget Control Act.[79] Ideally, now that the Government has returned to fiscal balance, DND should receive additional funding to hire more staff, particularly for its MCP Delivery organizations. However, in the absence of additional resources, and as it renews the CFDS and implements Defence Renewal, DND should nevertheless make adding acquisition capacity a priority by reallocating staff internally.

Outside of National Defence, there is a pressing need for additional human resources in other components of the acquisition workforce. The National Shipbuilding Procurement Strategy Secretariat, for instance, while responsible for coordinating and managing $35 billion in shipbuilding work and the

rebuilding of the Canadian shipbuilding industry, has less than a dozen core staff. Other key shortfalls exist at Industry Canada, whose responsibilities include the leveraging aspects of the DPS. These key changes are being enacted by a staff of around 30 in the reorganized ITB branch responsible for simultaneously developing new policies while, concurrently rolling out its incremental implementation and also managing the legacy IRB program. The overall leveraging strategy would benefit significantly from an increase in the organization's analytical capacity necessary for the development of a better understanding of the baseline Canadian defence industry and structure Value Propositions. This could further be improved by adding an additional dozen analysts and ensuring that the DAI's mandate compliments their work.

Conclusion

The Government of Canada should be commended for initiating a major change to defence procurement in Canada by launching the DPS. One of the biggest challenges the effort faces is managing expectations about what can be achieved through these reforms. It is improbable that any degree of effort will create a Canadian procurement system that delivers complex projects on their initial schedule, with the exact initial capability envisioned within the original indicative project budget. However, there is significant room for improvement and the DPS addresses some of these concerns.

To maximize these improvements, further action is necessary to create an acquisition workforce that is better suited to dealing with the complex reality of defence acquisitions. This change should be led by DND. This is not because it bears the most responsibility for delay (this responsibility falls across the acquisition community in general), but rather because DND has by far the greatest incentive to change. It is DND's capabilities that are not being acquired, its budget not being spent as intended, and its military that will ultimately deal with the consequences.

For the rest of the procurement system, government, and the defence industry, the full benefit of the new leveraging strategy will not be realized unless the delay in the procurement system is resolved. No matter how efficacious the new attempts to create greater domestic economic benefits may be, they will have little impact until the procurement system does a better job of moving projects through to implementation. The recommendations contained in this report will help ensure that the DPS' dual objectives of economic leveraging and improving equipment delivery are both met.

Recommendations:

1. Complete the review of the Canada First Defence Strategy. As part of that review: i) establish geostrategic priorities than can direct future procurements; ii) resolve the mismatch between funding and capabilities; and iii) prioritize planned defence acquisitions;

2. Increase the size of the acquisition workforce, with a particular focus on the ADM (Mat), Major Projects Delivery organizations, Industry Canada's ITB branch and the National Shipbuilding Procurement and Defence Procurement secretariats;

3. Increase the capacity of the acquisition workforce by: improving access to training opportunities; reducing the posting cycle for both public servants and military members into acquisition positions; linking staff rotations to key project milestones; and creating a dedicated, non-command, career path for procurement specialists in the Canadian military;

4. Extend recent efforts by DND to familiarize the central agencies and other acquisition workforce officials with the defence program;

5. Continue industry engagements, with a focus on providing opportunities for honest, two-way dialogue;

6. Improve communications about defence procurement, both inside government and between the government and the public. Increase the use of technical briefings on key files;

7. Develop a common basis for life cycle costing that is based on best practices, and institute it across Government. This should include assigning project contingencies appropriate to the nature of each project and the Canadian procurement system, and ensuring that project budgets include protection against lost purchasing power;

8. Build flexibility into DND's Investment Plan to account for cost escalation, delay, and new priorities;

9. Factor in changes to procurement costs created by the Defence Procurement Strategy into current and future project budgets; and

10. Implement the Defence Procurement Strategy changes as a comprehensive package, rather than as individual initiatives, and provide annual progress reports on the new strategy's implementation.

NOTES

[1] Public Works and Government Services Canada. "Defence Procurement Strategy." Last modified September 8, 2014, http://www.tpsgc-pwgsc.gc.ca/app-acq/stamgp-lamsmp/sskt-eng.html.

[2] Fergusson, James. "In Search of a Strategy: The Evolution of Canadian Defence Industrial and Regional Benefits Policy." *The Economics of Offsets*. Martin, Stephen, ed. Amsterdam: Overseas Publishers Association, 1996. 107-138.

[3] (These efforts have included, amongst many other recent initiatives, legislated reform in the United States, an attempt to turn over weapon system acquisition to a Government Owned, Contractor Operated agency in the United Kingdom, and the creation of a single agency responsible for materiel acquisition and support in Australia. In each case, despite extensive change, major problems persist.)

United States Senate, Committee on Homeland Security and Governmental Affairs, Permanent Subcommittee on Investigations. *Defense Acquisition Reform: Where do we go from Here?*. October 2, 2014.

BBC.com. "Defence procurement privatisation plan axed." December 10, 2013.

Grevatt, Jon. "Plans emerge to restructure Australian Defence Materiel Organisation." Janes.com. July 28, 2014. http://www.janes.com/article/41293/plans-emerge-to-restructure-australian-defence-materiel-organisation Accessed November 4, 2014.

[4] Davies, Charles. "Canada's Defence Procurement Strategy." *Vimy Paper 20*. Ottawa: Conference of Defence Associations Institute, September 2014. (The 2012 Strategic and Operating Review attempted a cross governmental analysis, but the impact of this effort is not clear.)

[5] "Smart Procurement." Public Works and Government Services Canada, last modified March 26, 2014, https://buyandsell.gc.ca/initiatives-and-programs/smart-procurement.

(The principles of smart procurement have been rolled into the new Defence Procurement Strategy.)

[6] Confidential Interviews. 2013, 2014.

[7] Coyne Andrew. "Canada's glorious bipartisan tradition of messing up military procurement." *National Post*. November 17 2014.

[8] (This is based on DND contracting data for FY 2012/2013 obtained by the author. These projects accounted for over $1.5 billion, or 24 percent, of all contract spending, despite comprising only 0.018 percent of total number of defence contracts let that year.)

[9] (This assessment only examines the timeliness of delivery. As discussed below, these projects are not universally viewed as successes, but based on other factors, such as their adherence to accepted procurement processes and their impact on the domestic defence industry, amongst other considerations.)

[10] Plamondon, Aaron. "Equipment Procurement in Canada and the Civil-Military Relationship." *Calgary Papers in Military and Strategic Studies*. 2 (2008).

[11] Norman, Vice Admiral Mark. Interview with Chris Thatcher. "One Navy: Writing a New Narrative That Resonates." *Vanguard Canada*. Department of National Defence. *HCM/FELEX Technical Briefing*. November 24, 2014.

[12] Plamondon, Aaron. *The Politics of Procurement*. Vancouver: UBC Press, 2010.

Fergusson, James. "In Search of a Strategy: The Evolution of Canadian Defence Industrial and Regional Benefits Policy." *The Economics of Offsets*. Martin, Stephen, ed. Amsterdam: Overseas Publishers Association, 1996. 107-137.

[13] Canadian Association of Defence and Security Industries. *Canada's Defence Industry*. Ottawa: 2009.

(Whether risk adversity has changed in recent years is a subject of debate. Those arguing it have cited the impact of the Gomery inquiry, Federal Accountability Act, the impact of multiple Auditor General Reports and the 2008 recession, while others contend that risk aversion remains relatively unchanged. Recently, PWGSC began allowing Bid Repair; a process by which bids that are non-compliant based on administrative errors can be corrected.)

[14] Sloan, Elinor. *Something Has to Give*. Calgary: CDFAI, October 2014.

Ross, Dan. "So Defence Procurement Is It Broken Again Or Is This Just Normal?" *On Track*. 18. 2: (2014).

Williams, Alan. *Reinventing Canadian Defence Procurement.* McGill-Queen's University Press, 2007.

CADSI Marine Industries Working Group, *Sovereignty, Security and Prosperity*. Ottawa: CADSI, 2009.

[15] Stone, J.C. *A Separate Defence Procurement Agency.* Calgary: Canadian International Council and Canadian Defence and Foreign Affairs Institute, 2012.

[16] Sloan, Elinor. "Canadian Defence Commitments: Overview and Status of Selected Acquisitions and Initiatives." *The School of Public Policy*, 6. 36:(December 2013): http://www.policyschool.ucalgary.ca/sites/default/files/research/e-sloan-canada-defence-revised.pdf.

[17] Pugliese, David. "Delays in purchasing for Canadian military at record levels." O*ttawa Citizen*, February 17, 2013.

[18] Canada, Office of the Auditor General of Canada. *Chapter 11: Department of National Defence.* Ottawa: 1982. Middlemiss, Dan. "Chapter 17: Defence Procurement in Canada." C*anada's International Security Policy*, David B. Dewitt and David Leyton-Brown, eds. Scarborough: Prentice Hall Canada Inc, 1995.

[19] Canada. Minister of Public Works and Government Services. *2013-14 Estimates.* Ottawa: 2013.

(Vote 5 includes funds for both equipment and infrastructure, but does not distinguish between them. It is defined in the Estimates as follows: "A capital expenditures vote is used when capital expenditures equal or exceed $5 million. Expenditure items in a "capital expenditures" vote would include items expected to exceed $10,000 for the acquisition of land, buildings and works, as well as the acquisition of machinery and equipment, or for purposes of constructing or creating assets, where a department expects to draw upon its own labour and materials, or employs consultants or other services or goods.")

(These statistics compare the available Vote 5 provided in the estimates, with actual expenditures.)

Canada. Receiver General for Canada. *Public Accounts of Canada.* Ottawa: Various Years.

[20] Canada, Office of the Auditor General of Canada. *Chapter 11: Department of National Defence.* Ottawa: 1982. Middlemiss, Dan. "Chapter 17: Defence Procurement in Canada." *Canada's International Security Policy*. David B. Dewitt and David Leyton-Brown, eds. Scarborough: Prentice Hall Canada Inc, 1995.

[21] Fetterly, Lieutenant Colonel Ross and Groves, Major Richard. *Accrual Accounting and Budgeting in Defence.* Kingston: Queen's University, Defence Management Studies, 2008.

[22] Canada, Department of National Defence. "Status Report on Transformational and Major Crown Projects." *Report on Plans and Priorities.* Ottawa: Multiple Years.

(As discussed earlier, defence procurement is a comprehensive activity involving much more than the acquisition of Major Crown Projects. The largest projects represent a disproportionate share of the defence program (with regards to cost) and are also the subset of defence procurement that is most comprehensively documented in public reports.)

[23] Ross, Dan. *2013 Ottawa Conference on Defence and Security.* Ottawa: CDA Institute, February 22, 2013.

[24] Canadian Government Official. *2014 Navy Outlook*. Ottawa: Canadian Association of Defence and Security Industries, April 8, 2014.

[25] Treasury Board of Canada Secretariat. "Policy on Investment Planning - Assets and Acquired Services." Last modified November 12, 2013 http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=18225.

[26] (This policy first requires an Organizational Project Management Capacity Assessment for each department on a four point scale assessing project management capacity as either: 1. Sustaining 2. Tactical 3.Evolutionary or 4. Transformational. The assessed capacity level establishes the project complexity and risk threshold above which ministers must seek approval

(expenditure authority) from Treasury Board Ministers. For example, the Minister of a department with an OPMCA rating of 1, can provide expenditure approval for Level 1 projects, but must seek Treasury Board approval for all projects assessed as 2, 3 or 4. Individual projects undergo a Project Risk and Complexity Assessment, based on the same 4 point scale, to determine their Risk and Assessment rating, which determines whether or not they require Treasury Board approval.)

Treasury Board of Canada Secretariat. "Policy on the Management of Projects." Last modified November 12, 2013 http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=18229&section=text#sec5.1.

Treasury Board of Canada Secretariat." Organizational Project Management Capacity Assessment Tool." Last modified May 1, 2013 http://www.tbs-sct.gc.ca/pm-gp/doc/ompca-ecogp/ompca-ecogp-eng.asp.

Treasury Board of Canada Secretariat. "Project Complexity and Risk Assessment Tool." Last modified May 1, 2013 http://www.tbs-sct.gc.ca/pm-gp/doc/pcra-ecrp/pcra-ecrp-eng.asp

[27] CADSI Marine Industries Working Group. *Sovereignty, Security and Prosperity.* Ottawa: CADSI, May 2009. 34.

[28] Hennessy, Michael. "Canadian Shipbuilding." *Canadian Naval Review* 4. 3 (Fall, 2008): 24.

[29] (All figures in this paragraph come from the Public Accounts of Canada, Vol. 2. These were converted to $1993/1994 using the Defence Economic Model by the author.)

[30] Canada, Department of National Defence, Chief Review Services. *Internal Audit of Capital Project Cost Estimation*. Last modified May 2013 http://www.crs-csex.forces.gc.ca/reports-rapports/2013/195p0972-eng.aspx.

[31] Canada, Office of the Auditor General of Canada. *Chapter 3: National Defence - Equipping and Modernizing the Canadian Forces.* Ottawa: 1998.

Canada, Office of the Auditor General of Canada. *Chapter 3: National Defence - Upgrading the CF-18 Fighter Aircraft.* Ottawa: 2004

[32] Canada, Department of National Defence, Chief Review Services. *Internal Audit of Capital Project Cost Estimation*. Last modified May 2013 http://www.crs-csex.forces.gc.ca/reports-rapports/2013/195p0972-eng.aspx.

[33] Canada, Department of National Defence. *Departmental Performance Report 2010/201.* Ottawa: 2011. 25.

[34] Canada, Department of National Defence. Access to information Request A-2013-01573. Ottawa: 2013.

[35] Canada, Department of National Defence. Access to information Request A-2013-00914. Ottawa: 2013.

[36] Sloan, Elinor. "Stretched to the Breaking Point." *National Post*, June 17, 2008.

[37] Buck, Vice Admiral Ron (Ret'd). "Defence Strategy: Defence Policy Realities in Canada, and the Canada First Defence Strategy Update." *Frontline Defence* 11. 2 (2014): 10.

[38] Williams, Commodore Kelly (Ret'd). Comments at "Getting the Biggest Bang for Our Buck". Ottawa:The School of Public Policy/CDFAI. February 19, 2014.

[39] Leslie, LGen Andrew. *Report on Transformation*. Ottawa: Department of National Defence, 2011. iv.

CDA Institute Roundtable on Defence Transformation. Ottawa: CDA Institute, October 5, 2011.

[40] Canada, Treasury Board Secretariat. Access to Information Request A-2013-00176. Ottawa: 2013.

[41] Canada, Treasury Board Secretariat. Access to Information Request A-2013-00176. Ottawa: 2013.

[42] Canada. Department of National Defence. *Canada First Defence Strategy.* Ottawa: 2008.

[43] Canada, Department of National Defence, Chief Review Services. *Internal Audit of Capital Project Cost Estimation*. Ottawa: 2013.

[44] Canada, Department of National Defence, Chief Review Services. *Internal Audit: Tactical Armoured Patrol Vehicle (TAPV)*. Ottawa: 2011.

[45] Canada, Department of National Defence, Access to Information request A-2013-00158. Ottawa: 2013.

[46] Yalkin, Tolga R. and Weltman, Peter. *An estimate of the fiscal impact of Canada's proposed acquisition of the F-35 Lightning II joint strike fighter.* Ottawa: Office of the Parliamentary Budget Officer, 2011.

[47] Ross, *2013 Ottawa Conference on Defence and Security.*

[48] CADSI Marine Industries Working Group. *Sovereignty, Security and Prosperity*. Ottawa: CADSI, May 2009. 35.

[49] Barkel, Erin K. and Story, Rod. *Budget Analysis for the Acquisition of a Class of Arctic/Offshore Patrol Ships*. Ottawa: Office of the Parliamentary Budget Officer, October 28, 2014.

[50] Bland, Douglas. *Chiefs of Defence: Government and the Unified Command of the Canadian Armed Forces.* Toronto: Canadian Institute of Strategic Studies, 1995.

[51] Canada, Department of National Defence. *Review of the Statement of Operational Requirement for the Fixed Wing Search and Rescue Aircraft*. Last modified March 12, 2010 http://www.forces.gc.ca/en/about-reports-pubs/fixed-wing-search-rescue-aircraft-2010.page.

[52] Canada, Office of the Auditor General of Canada. *Chapter 6: Acquisition of Military Helicopters.* Ottawa: Minister of Public Works and Government Services Canada, 2010. iii-42

[53] Canada, Public Works and Government Services Canada. *Evaluation of Options to Sustain a Canadian Forces Fighter Capability: Terms of Reference*. Last updated December 2012 http://www.tpsgc-pwgsc.gc.ca/app-acq/stamgp-lamsmp/torcc-torcf-eng.html.

[54] Lawson, General Tom. *Chief of the Defence Staff Guidance to the Canadian Armed Forces*. Ottawa: Department of National Defence, 2014. 14.

[55] Seymour, Tom and Banghart, Al. "Why The Reluctance On Performance-Based Logistics?" *Aviation Week & Space Technology*. June 25, 2014.

[56] Confidential Interview, 2013.

[57] Rowe, Ken. "In-Service Support of New Aircraft Fleets." *Frontline Defence* 4. 1 (January 2007): 20.

[58] MacLean, Chris. "Government Initiates First Stages of Procurement Reform." *Frontline Defence* 11. 3 (2014): 8.

[59] Canadian Government Official. *DEFSEC Atlantic 2014.* Halifax, NS. September 5, 2014.

[60] Macdonald, George. "New Defence Procurement Process: The Devil is in the Details." *Frontline Defence* 11. 2 (2014): 9.

[61] Canada, Department of National Defence. *Departmental Performance Report, 2008/2009.* Ottawa: 2009. 49.

[62] Confidential Interview, Ottawa, 2014.

[63] Finley, The Honourable Diane. Canada's Defence Procurement Strategy: The Defence Analytics Institute, "Getting the Biggest Bang for Our Buck, Ottawa." The School of Public Policy/CDFAI, February 19, 2014. http://www.tpsgc-pwgsc.gc.ca/medias-media/dm-ms/2014-02-19-eng.html

[64] Canada. Department of National Defence. *HCM/FELEX Technical Briefing*.

[65] Canada, Department of National Defence, Chief Review Services. *Audit of the Halifax-Class Modernization / Frigate Life Extension (HCM/FELEX) Project.* Ottawa: 2011.

[66] Finley, The Honourable Diane. *Defence Procurement Strategy*. Speech to the Economic Club of Canada, February 5, 2014.

[67] House of Commons Standing Committee on National Defence and Veterans Affairs, Procurement Study. Parliament of Canada, 36th Parliament, 2nd Session. Ottawa: 2000.

[68] Canada. Department of National Defence. *Canadian Defence Policy 1992*. Ottawa: April, 1992. 13.

[69] Lord Levene of Portsoken, et al. *Defence Reform*. Whitehall: The Stationary Office, June 2011.

[70] Canada, Department of National Defence, Chief Review Services. *Internal Audit of Capital Project Cost Estimation*. 2013.

Canada, Department of National Defence. *Defence Procurement Strategy and the New DND Challenge Function*. Last modified February 5, 2014 http://www.forces.gc.ca/en/news/article.page?doc=defence-procurement-strategy-and-the-new-dnd-challenge-function/hr7jbfih.

[71] Canada, Department of National Defence. Access to Information Request A-2013-00057. Ottawa: 2013.

[72] Ibid.

[73] Barkel, Erin K. and Story, Rod. *Budget Analysis for the Acquisition of a Class of Arctic/Offshore Patrol Ships*. Ottawa: Office of the Parliamentary Budget Officer, October 28, 2014. 10.

[74] The Canadian Press. "Arctic patrol ships budget 'insufficient' to buy 6 vessels," CBC.ca, Oct 28, 2014. http://www.cbc.ca/news/politics/arctic-patrol-ships-budget-insufficient-to-buy-6-vessels-pbo-1.2815446 Accessed November 4, 2014.

[75] Solomon, Binyam and Stone Craig. "Accrual Budgeting and Defence Funding." *Defence and Peace Economics*. 24. 3: (2013). 211-227.

[76] Pugliese, David. "Defence procurement staff struggle with burnout." *Ottawa Citizen*. November 24, 2014.

[77] Thatcher, Chris. "Project Manager Development: Matching Competency and Complexity." *Vanguard.* April/May, 2014. 12-14.

[78] May, Katherine. "Fixing the public service: Groom stronger, specialized managers, says Hugh Segal." *Ottawa Citizen.* September 3, 2014. http://ottawacitizen.com/news/national/fixing-the-public-service-groom-stronger-specialized-managers-says-hugh-segal.

[79] United States of America. Government Accountability Office. *Defense Acquisition Workforce: Improved Processes, Guidance, and Planning Needed to Enhance Use of Workforce Funds*. Washington: June 20, 2012.

MACDONALD-LAURIER INSTITUTE

True North in Canadian Public Policy

Board of Directors

CHAIR
Rob Wildeboer
Executive Chairman, Martinrea International Inc., Vaughan

VICE CHAIR
Jacquelyn Thayer Scott
Past President and Professor, Cape Breton University, Sydney

MANAGING DIRECTOR
Brian Lee Crowley
Former Clifford Clark Visiting Economist at Finance Canada

SECRETARY
Lincoln Caylor
Partner, Bennett Jones LLP, Toronto

TREASURER
Martin MacKinnon
Co-Founder & Chief Financial Officer, b4checkin, Halifax

DIRECTORS

John Beck
Chairman, Aecon Construction Ltd., Toronto

Pierre Casgrain
Director and Corporate Secretary of Casgrain & Company Limited, Montreal

Erin Chutter
President and CEO of Global Cobalt Corp., Vancouver

Navjeet (Bob) Dhillon
President and CEO, Mainstreet Equity Corp., Calgary

Wayne Gudbranson
CEO, Branham Group Inc., Ottawa

Stanley Hartt
Counsel, Norton Rose Fulbright, Toronto

Peter John Nicholson
Former President, Canadian Council of Academies, Ottawa

Advisory Council

Jim Dinning
Former Treasurer of Alberta

Don Drummond
Economics Advisor to the TD Bank, Matthews Fellow in Global Policy and Distinguished Visiting Scholar at the School of Policy Studies at Queen's University

Brian Flemming
International lawyer, writer and policy advisor

Robert Fulford
Former editor of *Saturday Night* magazine, columnist with the *National Post*, Toronto

Calvin Helin
Aboriginal author and entrepreneur, Vancouver

Hon. Jim Peterson
Former federal cabinet minister, Counsel at Fasken Martineau, Toronto

Maurice B. Tobin
The Tobin Foundation, Washington DC

Research Advisory Board

Janet Ajzenstat
Professor Emeritus of Politics, McMaster University

Brian Ferguson
Professor, health care economics, University of Guelph

Jack Granatstein
Historian and former head of the Canadian War Museum

Patrick James
Professor, University of Southern California

Rainer Knopff
Professor of Politics, University of Calgary

Larry Martin
George Morris Centre, University of Guelph

Christopher Sands
Senior Fellow, Hudson Institute, Washington DC

William Watson
Associate Professor of Economics, McGill University

CONFERENCE OF DEFENCE ASSOCIATIONS INSTITUTE

L'INSTITUT DE LA CONFÉRENCE DES ASSOCIATIONS DE LA DÉFENSE

151 Slater Street, Suite 412A
Ottawa ON K1P 5H3 Canada
Phone / Téléphone: +1 (613) 236 1252
Fax / Télécopieur: +1 (613) 236 8191

@CDAInstitute | www.cdainstitute.ca

MACDONALD-LAURIER INSTITUTE

8 York Street
Ottawa ON K1N 5S6 Canada
Phone / Téléphone: +1 (613) 482-8327
Fax / Télécopieur: +1 (613) 236 8191

@MLInstitute | www.macdonaldlaurier.ca